Synopsis of the laws of the Dominion of Canada respecting the sale of food and other commodities. (Ottawa: Dept. of Trade & Comm. 1916. Pp. 16.)

Capital and Capitalistic Organization

The Telephone and Telephone Exchanges. Their Invention and Development. By J. E. KINGSBURY. (New York: Longmans, Green and Company. 1915. Pp. x, 558. $4.00.)

Any one interested in the development of a public utility which has become in this country one of the most important servants of society and of commerce, will find this book significant and of value. It is intended by its author to comprise a short history of the telephone industry, and it is in fact an abbreviated or condensed history of the development of invention in the art of the telephone.

The book opens with interesting chapters describing the state of science anterior to the invention of the telephone by Alexander Graham Bell, and these are followed by chapters relating to the scientific characteristics of spoken language and to the development of Mr. Bell's ideas which eventuated in the telephone itself. All of this matter is interesting to one who would study the history of the development of this great, revolutionary invention, which has had a tremendous influence upon society. These eight chapters are all compressed in 76 pages, and therefore are perhaps too condensed to show the full romance of the early telephone work.

In opening the ninth chapter, the author says, "To the present generation familiarity in the use of the telephone has dulled the sentiment of wonder once existing that speech should be transmitted or that means should be found for diverting that speech from line to line at the speaker's desire. So promptly was science applied to commercial and social uses; so generally, after a time, was the application taken advantage of, that the wonder has evaporated and the user only become the more exacting in his requirements." Then follow a number of chapters comprising some hundred pages, dealing with the physical construction of the modern apparatus, including the exchange switchboards and associated apparatus, the transmitters and receivers, the call bells and other auxiliary devices, and the manner of their development and association into the modern complex commercial telephone system.

The book may be analyzed into sub-divisions comprising: The history of the growth of the idea of Bell and its introduction into commercial use; the development of the telephone exchange, with all its details; organization of the telephone industry in the United States, presented by the author in a most interesting manner; the development of great exchanges, with the so-called multiple switchboard, and utilizing underground cables in the larger cities; the engineering problems and difficulties which had to be met and overcome in making telephoning in great cities a success, which included the development of satisfactory underground cables, the putting of telephone engineering on a scientific and rational basis, the changing from the so-called series arrangement of devices to the branching or "bridging" system (a change apparently small in itself, but of far-reaching influence), the introduction of the common battery system in the form of a storage battery at the central office in substitution of the primary cells which had theretofore been used in each of the customer's appliances, and the development of automatic service; the development of long distance service and the modifications which this has imposed on the character of the instruments to be used in telephony; the prices of telephone service and the extent of the service in the different parts of the world.

The text is followed by appendices, showing telephone statistics of the world. Appendix B emphasizes the fact that the British government found it necessary in 1915 to increase the prices charged by the government telephone department.

The telephone statistics given in the appendices are now three years old, being dated January 1, 1914, but the relative importance of the telephone in the different countries still is similar to that given in this book. Of the nearly 15,000,000 telephones in the world on January 1, 1914, over 9,500,000 were in the United States. Of the nearly 5,500,000 outside of the United States, over 4,000,000 were in government systems, and in no country solely dependent on a government system has the telephone received such a tremendous development as in the United States. That this is due to the fact that our telephones are wholly in the hands of private companies who have exercised a superior degree of initiative and resourcefulness for the sake of enlarging the business to its fullest possibilities may be denied by some people, but it is not open to argument that nearly 65 per cent of the total world telephones are operated by private companies of the

United States, and that the United States is the only country in which there is such a widespread use of telephones that the people are using nearly 10 telephones for each 100 persons in population. No other country, with the exception of Canada—in which again most of the telephones are operated by private companies—exceeds one half of the number of telephones per 100 capita which is characteristic of the United States. In the European countries, the relation of the telegraph to the telephone may have something to do with this difference, but this can only account for the lesser part of the difference. In the Netherlands, with their tremendous density of population of nearly 500 people to the square mile, there are less than 1½ telephones per 100 of population. Norway and Sweden, notable among European states for their telephone density, have only 4 telephones per 100 of population, although a good part of the telephones of those countries are in government systems, and are supposed to be operated more economically than privately owned telephones in the United States.

These statistics also show that there is but one city in the world outside of the United States which has as large a telephone development in proportion to its population as the average for the 33 cities in the United States with over 200,000 population, and also the fact that the rural districts of no other country except the United States have come to use telephones so extensively that the rural telephones per capita of the rural population are nearly equal to the telephones per capita in the cities.

In the fiscal year 1913, according to these statistics, the receipts per telephone in the United States averaged $33, while they averaged $34 for the total of the world. The average for European countries, where an overwhelming proportion of the telephones are government owned (3,500,000 being government owned, to about 500,000 privately owned), the average receipts per telephone were $35, ranging from $21.20 for the government telephones of Luxemburg to $50 for both private and government owned (about half and half) in Spain.

To those who believe that the telephone service of the United States is over expensive to the average user, a study of the statistics in this book is likely to be illuminating, provided reliance for conclusions may be placed on comparisons between the statistics of privately owned and government owned systems. The impartial student of these statistics may arrive at the conclusion that the telephone prices in the United States are not likely to be

solved by large average reductions, whether the service remains in the hands of private companies or goes into the hands of the government, but can only be solved by considering the cost of the service to the different classes of users, so that users shall pay more directly in proportion to what they actually obtain from the telephone company in the way of messages. This may call upon the larger users to pay more, but users of small and medium needs may then pay less.

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NEW BOOKS

BURNETT, D. F. *Cases on the law of private corporations, selected and supplemented with notes.* (Boston: Little, Brown. 1916. Pp. 140.)

MAYOR, J. *Government telephones. The experience of Manitoba, Canada.* (New York: Moffat, Yard. 1916. Pp. viii, 176. $1.)

WORMSER, I. M. *Illustrative cases on corporations. A companion book to Clark on corporations, third edition.* (St. Paul: West Pub. Co. 1916. Pp. x, 451. $2.50.)

I. Opposing government ownership and operation of public utilities. II. Advocating exclusive regulation of all railroads by the federal government. (New York: Merchants' Association of New York. 1916. Pp. 55.)

The federal antitrust laws with amendments. (Washington: Dept. of Justice. 1916. Pp. 105.)

Labor and Labor Organizations

The Boot and Shoe Industry in Massachusetts as a Vocation for Women. By the DEPARTMENT OF RESEARCH OF THE WOMEN'S EDUCATIONAL AND INDUSTRIAL UNION (Boston). Studies in Economic Relations of Women, Vol. VI. Bulletin of the United States Bureau of Labor Statistics, Whole No. 180; Women in Industry Series, No. 7. (Washington: United States Department of Labor. 1915. Pp. 109. 80 cents.)

Millinery as a Trade for Women. By LORINDA PERRY. Prepared under the direction of SUSAN M. KINGSBURY and MARIAN PARRIS SMITH. Studies in Economic Relations of Women, Vol. V. (New York: Longmans, Green and Company. 1916. Pp. xi, 134. $1.50.)

The series of Studies in Economic Relations of Women of